

REMARKS

Claims 25, 29, 32, 39-40 have been amended. No new matter has been added. Support for the amendments may be found throughout the specification, for example at, the originally filed claims. New claim 44 has been added. No new matter has been added. Support for new claim 44 may be found throughout the specification, for example at, p. 9, line 1 of the specification. Previously withdrawn claims 1, 3-9, 16, 20 and 22 have been amended. No new matter has been added. Support for the amendments may be found at, for example, the originally filed claims. Claims 10-15, 17-19, 23-24, 27-28, 30-31 and 37-38 have been cancelled without prejudice. Applicants reserve the right to prosecute the subject-matter of those claims at a later date.

Claims 25-26, 29, 32-36, 39-41 and 44 are currently pending.

REQUEST FOR REJOINDER

The Examiner has withdrawn claims 1-24 "as being drawn to a nonelected invention, there being no allowable generic or linking claim." See Office Action at page 2. Amended claims 1, 3-9, 16, 20, 22 and claims 2, 21 are directed to a process for the preparation of a functionalized porous material that includes sintering polymer components to provide a porous substrate and grafting, using plasma polymerization, a molecularly imprinted polymer synthesized *in situ* using plasma polymerization onto the porous substrate to provide the functionalized porous material (that is also described in claim 25). Applicants respectfully request rejoinder of claims 1, 3-9, 16, 20, 22 as amended and claims 2 and 21.

CLAIM REJECTIONS

Rejection of claims under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 27-29, 37 and 38 under 35 U.S.C. § 112, second paragraph as being indefinite. See Office Action at p. 2. Claims 27, 28, 29 and 38 have been cancelled without prejudice thus rendering this rejection moot with respect to those claims. Claim 29 depends from independent claim 25.

Claim 25 has been amended and relates to a functionalized porous material that includes a porous substrate and a molecularly imprinted polymer synthesized *in situ* using plasma

polymerization. Claim 29 relates to a functionalized porous material which is synthesized using pulsed plasma polymerisation. The specification describes pulsed plasma polymerization as "exposing a substrate to a pulsed plasma field through which vaporized monomers pass, such that the vaporized monomers bond to the substrate to form a polymer chain." See p. 5, lines 10-12 of the specification.

Thus, a person of skill in the art guided by the claims and specification would be able to identify the metes and bounds of the claim. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 29.

Rejection of claims under 35 U.S.C. § 102

The Examiner has rejected claims 25-27, 30 and 33-35 under 35 U.S.C. § 102(b) as being anticipated by Piletsky et al. (*Macromolecules*, Vol. 33, p. 2092-2098 (2000)) ("Piletsky"). See Office Action at p. 3. Claims 27 and 30 have been cancelled thus rendering this rejection moot with respect to those claims. Claims 26 and 33-35 depend from independent claim 25.

Claim 25 relates to a functionalized porous material that includes a porous substrate including a body having an external surface and pores extending from the external surface into the body, wherein the pores define an internal surface and a molecularly imprinted polymer synthesized *in situ* using plasma polymerization; wherein the molecularly imprinted polymer is attached to the external surface and/or the molecularly imprinted polymer is attached to the internal surface of the porous substrate; and the molecularly imprinted polymer is grafted onto the porous substrate using plasma polymerization.

Piletsky describes surface functionalizations using molecularly imprinted polymers or applications such as solid phase extraction and other separation processes. See p. 3092 of Piletsky. Piletsky does not describe a functionalized porous material that includes a molecularly imprinted polymer synthesized *in situ* using plasma polymerization.

Accordingly, claim 25 and claims that depend therefrom are not anticipated by Piletsky for at least the reasons described above. Applicant respectfully requests reconsideration and withdrawal of this rejection.

Rejection of claims under 35 U.S.C. § 103

Piletsky

The Examiner has rejected claims 37-40 under 35 U.S.C. § 103(a) as being unpatentable over Piletsky. See Office Action at p. 4. Claims 37 and 38 have been cancelled thus rendering this rejection moot with respect to those claims. Claims 39-40 depend from independent claim 25.

As previously discussed, Piletsky does not describe a functionalized porous material that includes a molecularly imprinted polymer synthesized *in situ* using plasma polymerization. Piletsky describes surface functionalizations using molecularly imprinted polymers or applications such as solid phase extraction and other separation processes. See p. 3092 of Piletsky. As such, Piletsky does not teach or suggest a functionalized porous material that includes a molecularly imprinted polymer synthesized *in situ* using plasma polymerization.

Accordingly, claim 25 and claims that depend therefrom are patentable over Piletsky for at least the reasons described above. Applicants respectfully request reconsideration and withdrawal of this rejection.

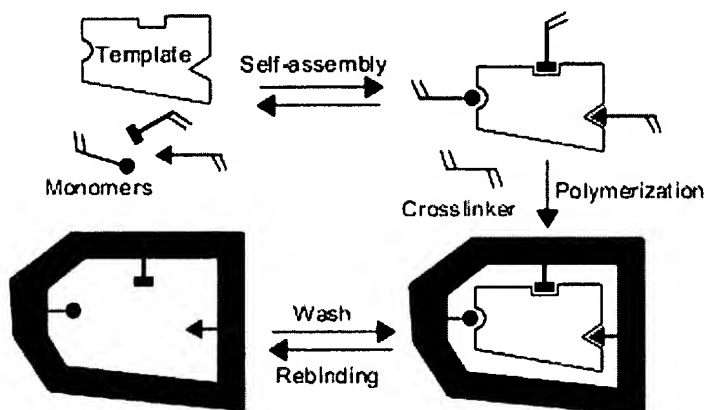
Piletsky in view of Timmons

The Examiner has rejected claim 28, 29, 31 and 32 under 35 U.S.C. § 103(a) as being unpatentable over Piletsky in view of U.S. Patent No. 6,329,024 to Timmons et al. ("Timmons"). See Office Action at p. 4. Claims 28 and 31 have been cancelled thus rendering this rejection moot with respect to those claims. Claims 29 and 32 depend from independent claim 25.

As previously discussed, Piletsky does not teach or suggest a functionalized porous material that includes a molecularly imprinted polymer synthesized *in situ* using plasma polymerization. Timmons utilizes pulsed plasma and crown ethers to produce an improved non-fouling surface for products such as contact lenses. See Abstract and col. 1, lines 34-36 of Timmons. Crown ethers are large (at least 12 membered) cyclic compounds which include oxygen atoms as part of the ring which are covalently bound to the molecule by ether linkages. See col. 4, lines 14-30 of Timmons. Timmons describes that the crown ethers can be deposited with a much higher C-O/C-C content under pulsed plasma conditions (compared to continuous wave plasma) and that this higher ether content improves their non-fouling performance. See for example, Example 9 at col. 11, line 59 to col. 12, line 12. Essentially, the pulsed plasma polymerisation conditions described in Timmons cause less damage to the C-O ether bonds in the crown ether monomers during polymerisation. Id. Therefore, Timmons seeks to use the

special polymerisation conditions of the pulsed plasma to maintain the ether linkages within the monomer (in this case a crown ether) during the polymerisation process because the pulsed plasma process can be carried out at a lower average power which is less destructive. Id.

In contrast, Applicants' claims are directed to a functionalized porous material which uses a plasma polymerisation process (pulsed or continuous) to form a molecularly imprinted polymer film within a porous substrate. See for example, claim 25. In the present application, the formation of a molecularly imprinted polymer involves the self assembly of functional monomers around the template molecule prior to polymerisation and cross-linking in order to form the molecularly imprinted polymer (see illustration below).



A person of skill in the art who is aware of the teachings of both the Piletsky and Timmons references would not consider attempting to make a molecularly imprinted polymer using Applicants' a multistage reaction involving the formation of a monomer-template complex as an intermediate. Further, it cannot be considered obvious from the teachings of both the Piletsky and Timmons references that making a molecularly imprinted polymer would happen in the vapor phase since Applicants describe pulsed plasma polymerization as "exposing a substrate to a pulsed plasma field through which vaporized monomers pass, such that the vaporized monomers bond to the substrate to form a polymer chain." See p. 5, lines 10-12 of the specification.

The oxygen atoms in the crown ethers described in Timmons (col. 4, lines 14-17) cannot possibly be considered to be a template molecule akin to that described by the Applicants: the plasma polymerization of the monomer described in Timmons has been formulated to maintain

these bonds, not create new ones (above and beyond polymerization) and so cannot be considered remotely similar to an imprinting process described by Applicants.

Since claims 29 and 32 are dependent on independent claim 25, they are patentable over the combination of Piletsky and Timmons for at least the reasons described above. Applicants respectfully request reconsideration and withdrawal of this rejection.

Piletsky in view of Nova

The Examiner has rejected claims 36 and 41 under 35 U.S.C. § 103(a) as being unpatentable over Piletsky in view of U.S. Patent No. 6,340,588 to Nova et al. ("Nova"). See Office Action at p. 5. Claims 36 and 41 depend from independent claim 25.

As previously discussed, Piletsky does not teach or suggest a functionalized porous material that includes a molecularly imprinted polymer synthesized *in situ* using plasma polymerization. Such a defect is not remedied by Nova. Nova describes "matrices with memories, of matrix materials that are encoded with an optically readable code" See Abstract of Nova. Nova does not teach or suggest a functionalized porous material that includes a molecularly imprinted polymer synthesized *in situ* using plasma polymerization.

Since claims 36 and 41 are dependent on independent claim 25, they are patentable over the combination of Piletsky and Nova for at least the reasons described above. Applicants respectfully request reconsideration and withdrawal of this rejection.

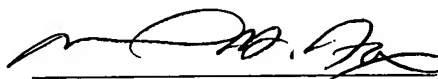
CONCLUSION

Applicants believe that the claims are in condition for allowance.

Should any fees be required by the present Reply, the Commissioner is hereby authorized to charge Deposit Account 19-4293.

Respectfully submitted,

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